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Serial No. **10/020,033**	Filing Date **December 6, 2001**	Examiner **Jason Scott Proctor**	Group Art Unit **2123**

Invention: **Computer System and Method Having A Facility Management Logic Architecture**

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TRANSMITTAL FORM

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Application Number	10/020,033
Filing Date	December 6, 2001
First Named Inventor	Attila Banki
Art Unit	2123
Examiner Name	Jason Scott Proctor
Total Number of Pages in This Submission	
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ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment / Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
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Remarks

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	ExxonMobil Upstream Research Company		
Signature			
Printed name	Matthew T. Shanley		
Date	February 27, 2008	Reg. No.	47,074

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Serial No. 10/020,033

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN RE APPLICATION OF ATTILA BANKI ET AL.

"COMPUTER SYSTEM AND METHOD HAVING A FACILITY MANAGEMENT LOGIC ARCHITECTURE"

On Appeal from the Office Action of the Examiner Mailed April 13, 2007, finally rejecting all pending claims

Examiner Jason Scott Proctor
Group Art Unit 2123

REPLY BRIEF

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ATTORNEY FOR APPELLANT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of: Attila Banki et al.	§	Confirmation No.: 8954
Serial No. 10/020,033	§	Examiner: Jason Scott Proctor
Filed: December 6, 2001	§	Art Unit: 2123
Title: "COMPUTER SYSTEM AND METHOD HAVING A FACILITY MANAGEMENT LOGIC ARCHITECTURE"	§	

REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41

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This Reply Brief is submitted in support of the Appeal in the above-identified application and in response to the Examiner's Answer mailed on January 24, 2008.

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Lorrie Rubio

STATUS OF THE CLAIMS

Claims 1-13, 15-28, 30-31 and 43-46 are pending. All pending claims stand finally rejected as noted in the Examiner's Action mailed April 13, 2007. In the present paper, rejected Claims 1-13, 15-28, 30-31 and 43-46 are appealed. All pending claims have previously been listed in the Claims Appendix of the Appeal Brief filed on November 2, 2007.

In the Examiner's Answer dated January 24, 2008, the Office has clarified certain aspects of the rejections based upon the prior art of record. Appellant respectfully traverses each of the rejections advanced by the Office in the Final Office Action dated April 13, 2007, and maintains the arguments submitted in the Appeal Brief dated November 2, 2007, the entire contents of which is incorporated by reference herein.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-13, 15-18, 20, 23-28, 30, 43, and 46 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over "Real-Time Workshop" (referred to by the herein as "*Real-Time Workshop*") in view of "The C++ Programming Language" by Bjarne Stroustrup (referred to herein as "*Stroustrup*").

Claims 21-22 and 44-45 are rejected under 35 U.S.C. §103(a) as purportedly unpatentable over *Real-Time Workshop* in view of *Stroustrup* and further in view of U.S. patent 6,052,520 ("*Watts*").

Claims 19 and 31 are rejected under 35 U.S.C. §103(a) as purportedly unpatentable over *Real-Time Workshop* in view of *Stroustrup* and further in view of Official Notice.

ARGUMENT

Appellant addresses specific assertions made by the Office in the Examiner's Answer. Further, Appellant respectfully submits that the Office has mischaracterized the alleged teachings of the Real-Time Workshop reference. Specifically, if the Real-Time Workshop reference is properly reviewed in its entirety, the Office will appreciate that the interpretation of the "Real-Time Workshop" reference advanced by the Office in the Final Office Action dated April 13, 2007 is improper.

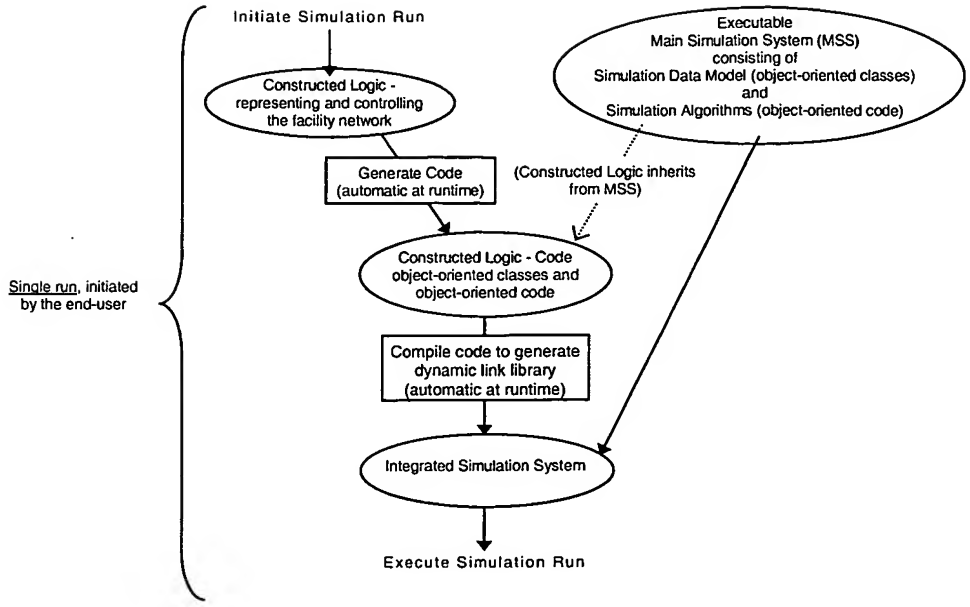
Specifically, claim 1 stands rejected in the Final Office Action under 35 U.S.C. §103(a) as being allegedly unpatentable over "Real-Time Workshop" (referred to herein as "*Real-Time Workshop*") in view of "The C++ Programming Language" by Bjarne Stroustrup (referred to herein as "*Stroustrup*"). This rejection is respectfully traversed.

"To establish *prima facie* obviousness of a claimed invention, **all the claim limitations** must be taught or suggested by the prior art." M.P.E.P. § 2143.03 (emphasis added); see also *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Further, "**All words** in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. 2143.03 (emphasis added); see also *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Applicants respectfully submit that each and every element of pending claims 1-13, 15-28, 30-31 and 43-46 is not found within the references cited by the Examiner.

Claim 1 recites, in part, a computer system for simulating a physical system comprising object-oriented software in a main simulation system stored in the memory. The object-oriented software is configured to provide a logic interface to dynamically construct logic to customize simulation of transport phenomena through a model of the physical system. The constructed logic is converted into corresponding object-oriented code ***during a simulation*** *without intervention of the simulator user.* (Emphasis Added.) The *object-oriented code is integrated, without intervention of the simulator user*, with the main simulation system which comprises a

simulation data model and simulation algorithms, resulting in an integrated simulation system. (Emphasis Added.) The object-oriented code extends the simulation data model by creating new classes that inherit from the simulation data model, and the object-oriented code is configured to call functions of the integrated simulation system and use member data of the integrated simulation system. Appellant submits that the prior art of record does not describe or suggest each and every feature of the unique combination of limitations recited in claim 1. Accordingly, these rejections should be overruled.

The Office has suggested that Real Time Workshop describes or suggests object oriented software configured to convert the constructed logic into corresponding object-oriented code ***during a simulation*** *without intervention of the simulator user*. (Emphasis Added.) However, Appellant submits that the Office has misinterpreted the Real Time Workshop reference, e.g., the Office cites merely to pages 1-1 and 1-2 of the Real Time Workshop reference when advancing purported evidence of automatically generating code. For example, the following schematic generally shows the relationship of constructed logic, the simulation model, and integrated simulation system of Appellant's claimed computer system. As recited in claim 1, the Office will note that the constructed logic is converted into corresponding object-oriented code ***during a simulation*** *without intervention of the simulator user.* (Emphasis Added.) The object-oriented code is integrated, *without intervention of the simulator user*, with the main simulation system which comprises a simulation data model and simulation algorithms, resulting in an integrated simulation system. (Emphasis Added.)



In contrast, the Real Time Workshop reference does not describe or suggest a single example of software configured to convert the constructed logic into corresponding code ***during a simulation*** *without intervention of the simulator user.* (Emphasis Added.) For example, the rapid prototyping process which the Office equates to the recited software of claim 1 is described in specific detail at pages 1-7 and 1-8 of the relied upon Real Time Workshop reference. The second and third paragraphs of page 1-7 of the Real-Time Workshop reference are provided hereinafter, which clearly describe the manner in which Simulink, MATLAB, and Real Time Workshop are collectively utilized in a rapid prototyping process:

> The ***rapid prototyping process begins in Simulink. First, you develop a model in Simulink***. In control engineering, this involves modeling plant dynamics and including additional dynamic components that constitute a controller and/or an observer. In digital signal processing, the model is typically an exploration of the signal-to-noise ratio and other characteristics of the input signal. ***You then simulate your model in Simulink; you can use MATLAB, Simulink, and toolboxes to aid in the development of algorithms and analysis of the results***. If the results are not satisfactory, ***you can iterate*** the modeling/analysis process until results are acceptable. (Emphasis Added.)

> ***Once you have achieved the desired results, you can use the Real-Time Workshop to generate downloadable C code (for the appropriate portions of the model).*** Using Simulink in external mode, ***you can tune parameters and further refine your model***, again rapidly iterating to achieve required results. At this stage, the rapid prototyping process is complete. You can begin the final implementation for production with confidence that the underlying algorithms work properly in your real-time production system. (Emphasis Added.)

Appellant submits that there are several notable aspects of the above-described rapid prototyping process which suggest that the rejection based upon this reference is improper. The Real Time Workshop reference describes an integrated prototyping process which relies upon Simulink, e.g., for building and simulating models, MATLAB, e.g., for analysis and development of algorithms, and/or Real Time Workshop, e.g., for generating code. See, e.g., pages 1-1 through 1-21, 2-12 through 2-13, 6-4, 12-2, and Fig. 6-1 of the Real Time Workshop reference. However, the Real Time Workshop reference does not describe a single example of converting logic into code, object-oriented or otherwise, ***during a simulation***. Rather, every example described in the Real Time Workshop reference suggests that code is generated, in response to invocation by the user, and ***after the simulation***. See, e.g., "Fig. 1-2: The Rapid Prototyping Development Process," page 1-8 of the Real Time Workshop reference, provided hereinafter. Appellant submits that the rapid prototyping process of the Real Time Workshop reference, which specifically relies upon generating code after a simulation, e.g., after the results are acceptable, cannot reasonably be construed to suggest generating code ***during a simulation***. Accordingly, this rejection is improper and should be overruled.

The figure below shows the rapid prototyping process in more detail.

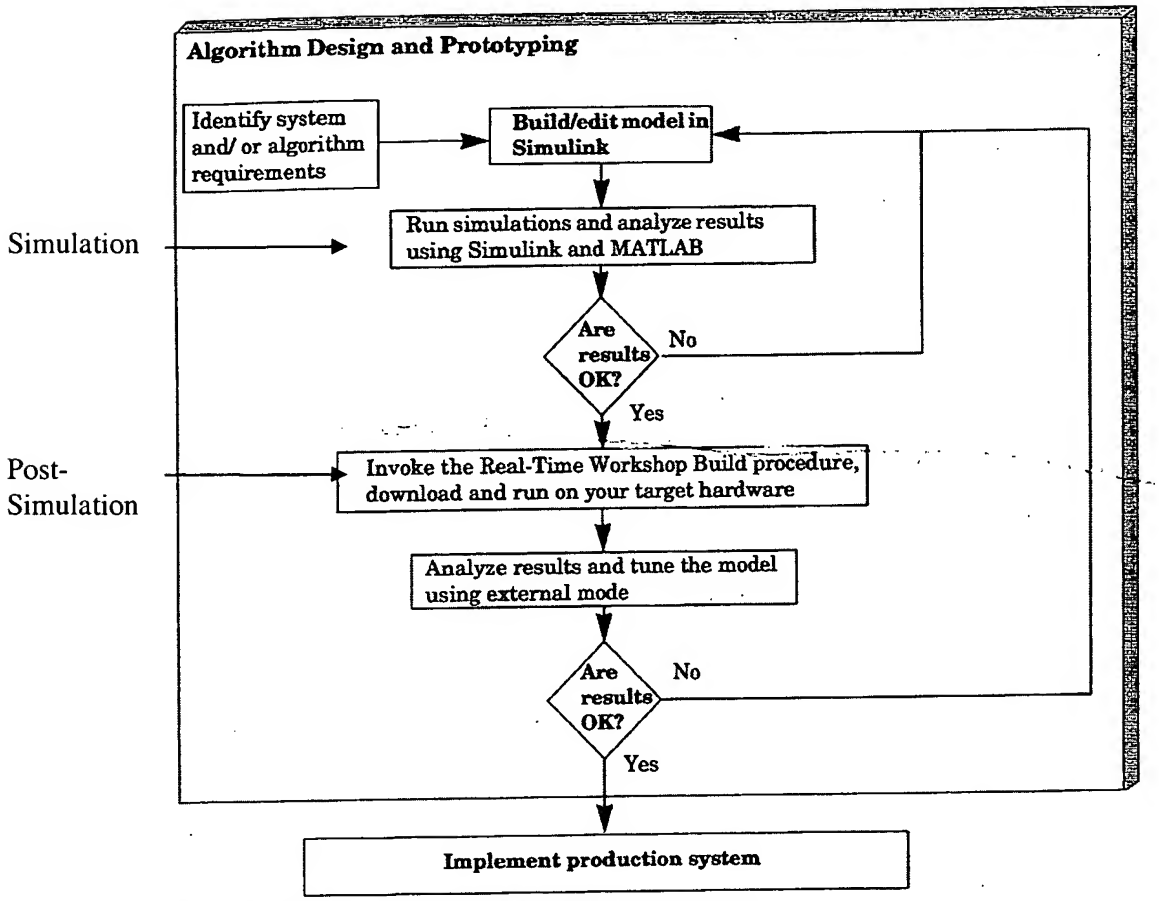


Figure 1-2: The Rapid Prototyping Development Process

In addition, the modular components described in the Real Time Workshop reference are specifically described as being invoked or initiated in response to user interaction. For example, each of MATLAB, Simulink, and Real Time Workshop are discrete modules that provide some individual, automated processing, but each require user interaction to invoke their respective functionality, e.g., Real Time Workshop requires the user to invoke the Real-Time Workshop Build procedure after the Simulink simulation. See, e.g., Fig. 1-2: The Rapid Prototyping Development Process (above). Accordingly, Appellant submits that the Real Time Workshop reference does not describe or suggest software configured to convert the constructed logic into corresponding object-oriented code ***during a simulation without intervention of the***

simulator user. In addition, Stroustrup and/or Watts do not describe or suggest this shortcoming of the Real Time Workshop reference. In fact, the Office has not relied upon Stroustrup, Watts, and/or Official Notice, to advance either of the shortcomings of the Real Time Workshop reference identified hereinabove. Therefore, claim 1, and each of its dependent claims are patentable over the Real Time Workshop reference, Stroustrup, and/or Watts for at least these reasons, and the additional reasons described in the Appeal Brief filed on November 2, 2007.

Similarly, claim 20 recites, in part, a computer-implemented method of simulating a physical system. Logic is dynamically constructed to customize simulation of transport phenomena through a model of the physical system by a reservoir simulator user. Simulation of transport phenomena is initiated through the model of the physical system by the reservoir simulator user. The initiation of simulation of the transport phenomena causes the logic to be *automatically converted, without intervention of the reservoir simulator user,* into corresponding object-oriented code. As described above with respect to claim 1, Real Time Workshop and/or Stroustrup fail to describe or suggest this feature. Specifically, the Real Time Workshop reference which has been relied upon by the Office to suggest this feature in the prior art of record specifically requires user interaction to invoke generation of code after the simulation. As recited in claim 20, the initiation of simulation automatically results in the simulation of transport phenomena, including causing the logic to be automatically converted, without intervention of the reservoir simulation user, into corresponding object-oriented code. The Real Time Workshop reference specifically requires the user to invoke code generation, after simulation and after a determination of the user of the acceptability of the model simulated in Simulink. Accordingly, claim 20, and each of its dependent claims, is patentable over the Real Time Workshop reference, Stroustrup, and/or Watts for at least this reason and the reasons described in the Appeal Brief filed on November 2, 2007.

Accordingly, Appellant respectfully submits that the rejections based upon the combination of the Real Time Workshop reference in view of Stroustrup are improper and should be overruled. Further, the remaining references of the prior art of record

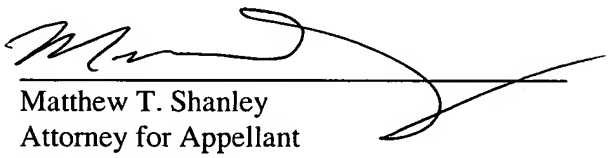
fail to describe or suggest any of the deficiencies described hereinabove with respect to claims 1 and 20.

CONCLUSION

No additional fees or expenses are believed to be required; however, if any additional fees are required, please charge ExxonMobil Deposit Account No. 05-1328. Based on the foregoing discussion, Appellant respectfully requests that the Examiner's final rejections of claims 1-13, 15-28, 30-31 and 43-46 be overruled and withdrawn by the Board, and that the application be allowed to issue as a patent with all pending claims.

Respectfully submitted,

Date: 27 February 2008



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